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AN ANDROID BASED MOBILE APPLICATION FOR TRACKING DAILY EXPENSES

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ABSTRACT

This study is aimed at developing an android based mobile application capable of monitoring and controlling personal expenses, as well as cautioning the user against reckless and unbudgeted spending. The developed system was designed using system flowchart, use case diagram, sequence diagram, class diagram and system architecture diagram. It was implemented using Java programming language on android studio and My SQL. The developed system was evaluated based on basic functionality tests performed on the individual modules, the integrated testing as well as the overall function testing. The results of testing the functionalities of the developed system showed that all the modules worked properly when tested individually. They rejected invalid inputs and responded promptly to user requests. Database operations such as insert, update, delete and add that were performed yielded expected results, and data consistency / integrity are maintained in the reports generated. Thus, the developed system provides an easy to use, portable and secured means of enhancing financial sustainability and promotes individual and societal economic growth via fiscal discipline.

Keywords

Android, mobile application, expenses, module, system.

I. INTRODUCTION

As technological innovation develops, numerous Information Technology (IT) based applications are developed to aid individuals and organizations in performing tasks, especially those being carried out on daily basis. This android based mobile application for tracking daily expenses aims to automate the record keeping and monitoring of daily expenses. In those days, a costs day book was used to monitor day to day costs, periodic costs and ascertain the financial plan manually. Nowadays, the greater part of the world is utilizing advanced mobile phones and a standout amongst the most utilized is most recent version android mobiles. The wide use of these android mobile phones and their ability to run software applications, make a lot of sense in making this application android based. The use of this application will among other things help to monitor rate of spending, refresh information and give warning notification among other things.

Objective

The aim of this project is to develop an Android-based mobile application for monitoring and controlling personal

expenses. The application aims to promote fiscal discipline by cautioning users against reckless spending and facilitating budget management. It seeks to provide users with a convenient and user-friendly platform to track their expenses in real-time, thereby enhancing financial awareness and decision-making. The project aims to leverage modern technology to offer features such as expense categorization, budget setting, and alerts for overspending. Ultimately, the goal is to empower users to make informed financial choices, leading to improved financial sustainability and individual economic growth.

The objectives of this project are:

- Develop a user-friendly Android mobile application for expense tracking and management.
- Implement features for real-time monitoring of expenses and income.
- Incorporate functionality for setting budget limits and providing warnings for overspending.

- Design a secure database system for storing and retrieving financial data.
- Enable users to categorize expenses and generate comprehensive financial reports.
- Conduct thorough testing to ensure the reliability and functionality of the application.
- Provide documentation and user guides for easy understanding and usage of the application.
- Ensure compatibility with a wide range of Android devices and versions.
- Enhance user engagement through intuitive interface design and interactive features.
- Continuously update and maintain the application to address user feedback and improve performance.

II. LITERATURE SURVEY

Expense is an outflow of money to another person or group to pay for an item or service, or for a category of costs. It is a cost that is "paid", usually in exchange for something of value (Carvalho and Basso, 2014). Examples

of our daily expenses include buying of recharge cards, buying food, junks, provision, fruits, subscription, clothing and so on. According to Kim (2012), expense management refers to the system deployed by a person or business to process, pay, and audit personal or employee-initiated expenses. Expense management includes the policies and procedures that govern such spending, as well as the technologies and services utilized to process and analyse the data associated with it.

In Expense management automation, there are four main factors that drive a person or business organization to automate their expense management processes (Turpin, 2017):

- i. Compliance focus: 57% have poor visibility into spend and compliance so they do not know how much they are spending and they cannot ensure that all of those costs remain within the boundaries of the company's handbook or policies regarding expense reporting
- ii. Cost reduction: 38% need to reduce expense processing costs
- iii. More control: 35% have no control over total spending

iv. Improved productivity: 20% need to eliminate manual and paper processes to improve productivity and satisfaction.

Below are identified strategies tailored towards expense management systems

i. Spreadsheets: Spreadsheets can be an easy, cheap way to keep track of expenses, but they still have paper receipts that go along with them that can be lost or damaged. This can also be a labour-intensive method and it can be confusing if employees are not good at using spreadsheets (Wild, 2010)

ii. Paper forms: Paper forms work well with paper receipts. This is also an inexpensive way to manage expense reports. However, this can amount to a lot of manual work of logging and tracking these reports for both employees, approvers, and the people who need to pay the bills in the accounting department (Peijiang, 2012).

iii. Software: Software reduces the workload, but it may also be expensive to implement. According to the Aberdeen Group's report, "Best-In-Class T&E Expense Management: How They Do It". The Software can solve the major problems of compliance, manual

labour, approval time, and the cost of expense reporting overall.

Expense Tracker was developed by Andtek (2012), this system provides the users with the facility to save their daily expenses. The main problem with this system, which arose from users complaints, is that it does not provide the customization option for currencies. Hence, it may not be very appealing to people from different countries to use since people tend to be more comfortable with currency based transactions. The main learning outcome from this system which came in mind is to customize the options for currencies so that users from other countries will not suffer the same problem which they are suffering in the current system.

Peijiang (2010) developed the Expense Manager which has a lot of features for expense monitoring. This system provides budget alert in form of notifications to caution users whenever their spending limits are exceeded. However, the system is limited to having facility for keeping expense reports of the users that have not passed a year.

Kim (2013) developed Coin Keeper which provided the same functionalities

as the Expense Manager, but could not provide monthly, yearly and graphical reports which the users of the system had complained about. Also, Peijiang (2012) developed the Daily Expense Tracker which provides solution to the majority of the problems left unsolved by the previously reviewed systems. The system is good, but heavy because of functionalities like calendar which allows the users to view the report on daily basis. It is observed that this application provides graphical layout wherever possible, for instance, using symbol for cash instead of written format. The proposed system uses more of texts where necessary to depict things instead of images, hence making the app lighter and loads faster, without compromising efficient interface design.

Kim (2015) developed a Daily Expense Manager which comprised of mobile and web platforms for expense management and has many amazing features that help users to track their daily, weekly and monthly spending without having to spend much time on the application. This was achieved by the use of expense categories that allows the user to manage expenses under

categories such as food, clothing, energy and the likes. Other features include currency customizable expense and income categories.

The main limitation of this system is that it did not provide synchronization with web server, and as such, the user has to either choose to use the web or mobile platform. The proposed system employs some of the excellent features derived from past works such as the “expense category” and “currency choice” features implemented in Daily Expense Manager. This will help the user to spend lesser time on the app since there would be no need of typing details of a particular expense.

III. EXISTING SYSTEM

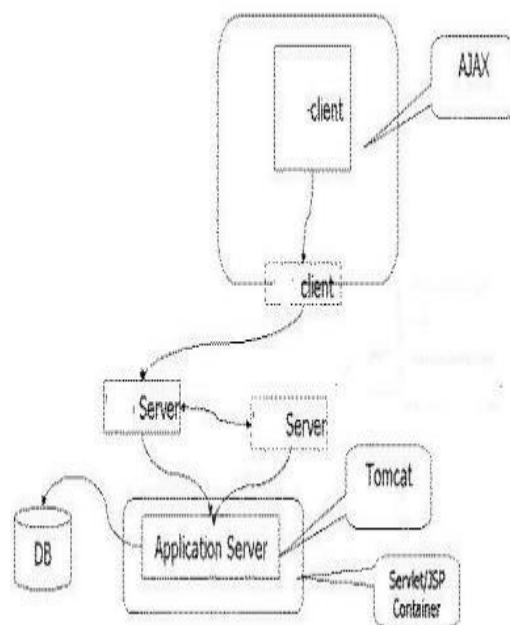
The existing system for personal expense management typically relies on manual methods such as pen-and-paper tracking or basic spreadsheet applications. Users manually record their expenses and income, often lacking real-time monitoring capabilities. These methods may lack robustness, leading to inaccuracies, inconsistencies, and difficulty in generating comprehensive financial reports. Additionally, manual systems may lack features such as

budget alerts, expense categorization, or data encryption, potentially compromising financial security and efficiency. Overall, the existing system lacks the convenience, automation, and functionality provided by modern digital solutions, hindering effective expense management and financial planning.

IV. PROPOSED SYSTEM

Top down coding approach was employed in the application software implementation using Java programming language on android studio. This involved dividing the implementation process into subunits or modules and each subunit being further divided into even smaller subunits. This process of division is repeated until each unit is sufficiently small enough to be conveniently coded (implemented) from scratch as an independent entity that performs a clearly defined operation. The analysis and comparison of existing mobile applications was done and this

resulted from the review of related implemented methodologies. The critical analysis led to the adoption of the scheme of requirement specifications that highlighted the nature of the expense tracker mobile app implemented in this work. The process followed in designing the mobile application is succinctly written in the following sections.



System Architecture

V. RESULTS



Fig :1 The app login page

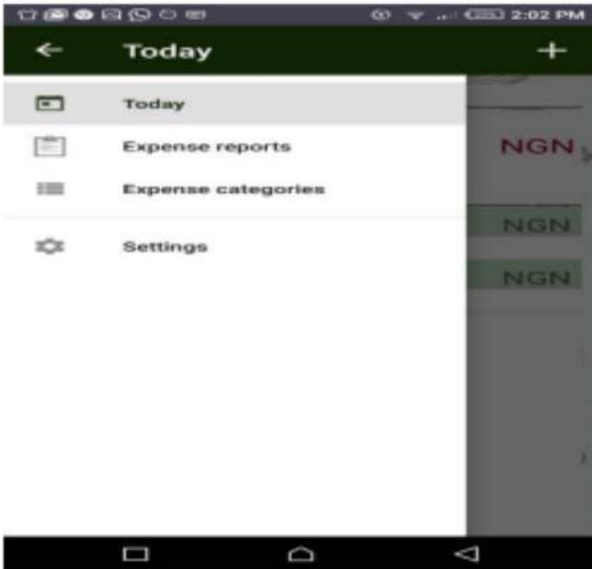


Fig:2 Expense manager's Menu

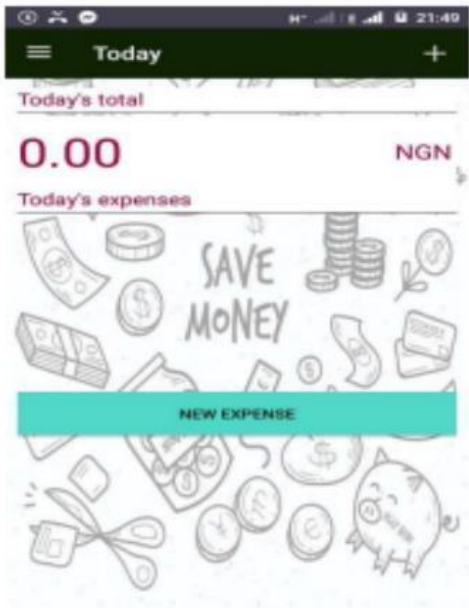


Fig: 3 The Landing Page



Fig4 : Adding new Expense

Figure 1 is the log in page where the user is expected to log in to the app with a valid password. Figure 2 shows the App menu and the landing page is

displayed in Figure 3. Figure 4. shows the interface that allows user to add new expense

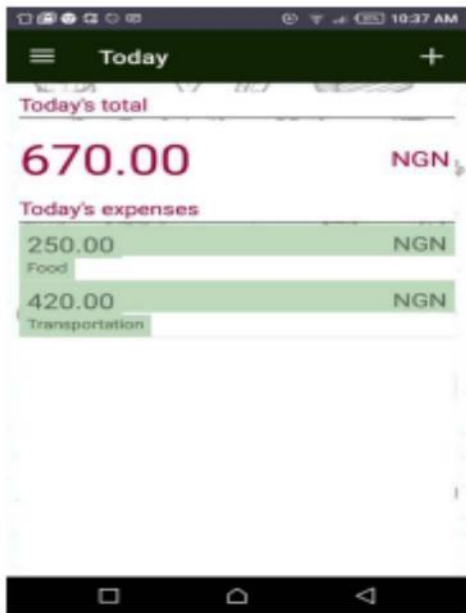


Fig :5 Today’s added Expenses

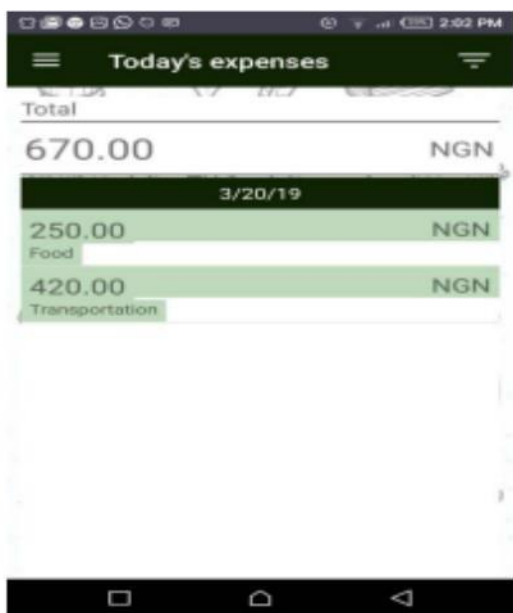


Fig:6 Today’s Total Expenses

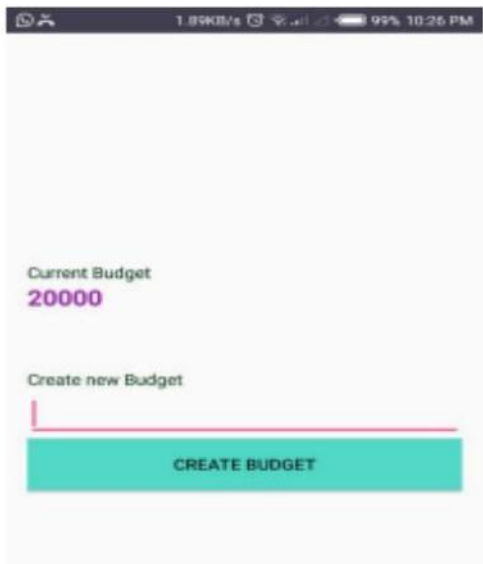


Fig:7 Add Budget Page

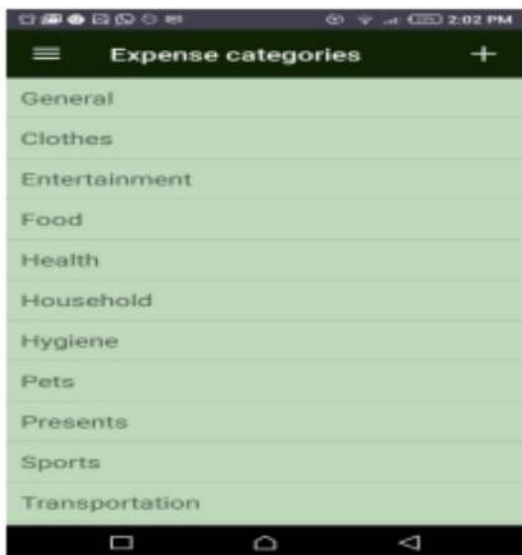


Fig 8: Expense Category Page

Figure 5 shows a day added expenses while Figure 6 shows a day’s total expenses. Figure 7 depicts where user can be allowed to add budget which

pops up a message when budget is exceeded. Figure 8 displays several expense categories.

VI CONCLUSION AND FUTURE ENHANCEMENT

In conclusion, the development and implementation of an Android Based Mobile Application for Tracking Daily Expenses capable of helping users to keep records of their daily expenses monitor their spending and control wasteful spending had been presented. Java programming language on android studio was used for the application design implementation. The developed system was designed using system flowchart, use case diagram, sequence diagrams, class diagram and system architecture diagram which makes the system user friendly with easy to use interface for any user including those that are not used to computer software. The developed application would help in showing the great advantages of the use of Information technology in the financial sector of our growing economy in such a way that enhances expenses monitoring and financial life in general. It has also helped in providing more knowledge in Java programming on Android studio, Mobile app development, SQLite Server database application and integration. Hence, an android based mobile application

capable of monitoring and controlling personal expenses, as well as cautioning the user against reckless and unbudgeted spending had been designed, implemented and evaluated.

In the future several avenues could be explored to further improve its functionality, usability, and overall user experience. One potential enhancement could involve implementing additional security measures, such as biometric authentication options like fingerprint or facial recognition, to offer users more secure and convenient login methods. Furthermore, integrating machine learning algorithms could enable the application to analyze users' spending patterns and provide personalized recommendations for budgeting and saving. Additionally, enhancing the reporting capabilities by incorporating data visualization tools could allow users to gain deeper insights into their financial habits and trends. Another avenue for improvement could involve expanding the application's compatibility to support multiple platforms beyond Android, such as iOS and web-based interfaces, to reach a broader audience.

Moreover, incorporating features for expense forecasting and goal setting could empower users to proactively manage their finances and work towards achieving their financial objectives. Lastly, fostering community engagement by implementing social features like forums or sharing functionalities could enable users to exchange tips, strategies, and support each other in their financial journey. These enhancements would not only enrich the user experience but also contribute to the application's effectiveness in promoting financial literacy and stability

1. **Biometric Authentication:**

Implement biometric authentication options such as fingerprint or facial recognition for added security and convenience during login.

2. **Multi-Currency Support:**

Enhance the application to support multiple currencies, allowing users to track expenses and budgets in different currencies simultaneously.

3. **Expense Categories and Tags:**

Introduce customizable expense

categories and tags to provide users with more granular control over expense tracking and reporting.

4. **Automated Expense Tracking:**

Incorporate features for automatic expense tracking, such as integrating with bank APIs to fetch transaction data or using OCR technology to scan receipts.

5. **Expense Reminders and Alerts:**

Implement reminders and alerts for upcoming bills, payment due dates, or when approaching budget limits to help users stay on track with their financial goals.

6. **Offline Mode:**

Develop offline functionality to allow users to access and manage their finances even when they don't have an internet connection, ensuring continuous usability.

7. **Expense Forecasting:**

Implement predictive analytics to forecast future expenses based on historical data, helping

users plan and budget more effectively.

8. **Expense Tracking Widgets:**

Create widgets for the home screen or lock screen of mobile devices to provide quick access to expense tracking features and real-time financial information.

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